

**INDIANA DEPARTMENT OF TRANSPORTATION
OFFICE OF MATERIALS MANAGEMENT**

**FLEXIBILITY OF EPOXY PENETRATING SEALERS
ITM No. 604-08T**

1.0 SCOPE.

- 1.1** This method of test covers the procedure to determine the flexibility of a dry film of an epoxy penetrating sealer.
- 1.2** The values stated in either acceptable English or SI metric units are to be regarded separately as standard, as appropriate for a specification with which this ITM is used. Within the text, SI metric units are shown in parenthesis. The values stated in each system may not be exact equivalents; therefore, each system shall be used independent of the other, without combining values in any way.
- 1.3** This ITM may involve hazardous materials, operations, and equipment and may not address all of the safety problems associated with the use of the test method. The user of the ITM is responsible for establishing appropriate safety and health practices and determining the applicability of regulatory limitations prior to use.

2.0 REFERENCES.

2.1 ASTM References.

- D 522 Test Methods for Mandrel Bend Test of Attached Organic Coatings
- D 609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products
- D 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels
- E 145 Specification for Gravity-Convection And Forced-Ventilation Ovens

3.0 APPARATUS.

- 3.1** Steel panels, approximately 0.035 in. (0.90 mm) thick, 3in. x 6in. (75 mm x 150 mm)
- 3.2** Wet film applicator, capable of wet film cast of approximately 4 mils (100 μ m)
- 3.3** Forced draft heating oven, Type IIA, capable of $125 \pm 5^{\circ}\text{F}$ ($52 \pm 2^{\circ}\text{C}$), in accordance with ASTM E 145
- 3.4** Mandrel, 1/4 in. (6 mm) diameter, in accordance with ASTM D 522, Test Method B

3.5 Magnifying lens, 2X to 5X power

3.6 Organic solvent, suitable to dissolve oil and grease films in accordance with ASTM D 609 Procedure D

4.0 PROCEDURE.

4.1 Prepare the steel panel in accordance with ASTM D 609, Procedure D.

4.2 Using a wet film applicator in accordance with ASTM D 823, Practice E, apply to a solvent-cleaned steel panel sufficient material to form a dry film of approximately 2 mils (50 μ m) thickness.

4.3 Air dry the specimen at 70 to 80°F (21 to 27°C) for 6 to 8 hours, then place the specimen in a forced draft oven for 48 h at 125 \pm 5°F (52 \pm 2°C). Remove the panel from the oven and condition the panel at 70 to 80°F (21 to 27°C) for 30 minutes.

4.4 Place the test panel over a mandrel with the uncoated side in contact and with at least 2 in. (50 mm) overhang on either side. Using a steady pressure of the fingers, bend the panel approximately 180° around the mandrel at a uniform velocity in a time of 1 s.

4.5 Examine the specimen at low magnification (2X to 5X) to determine whether there is any breaking or cracking of the film.

5.0 REPORT. A pass or fail test is reported by determining whether cracking is produced.